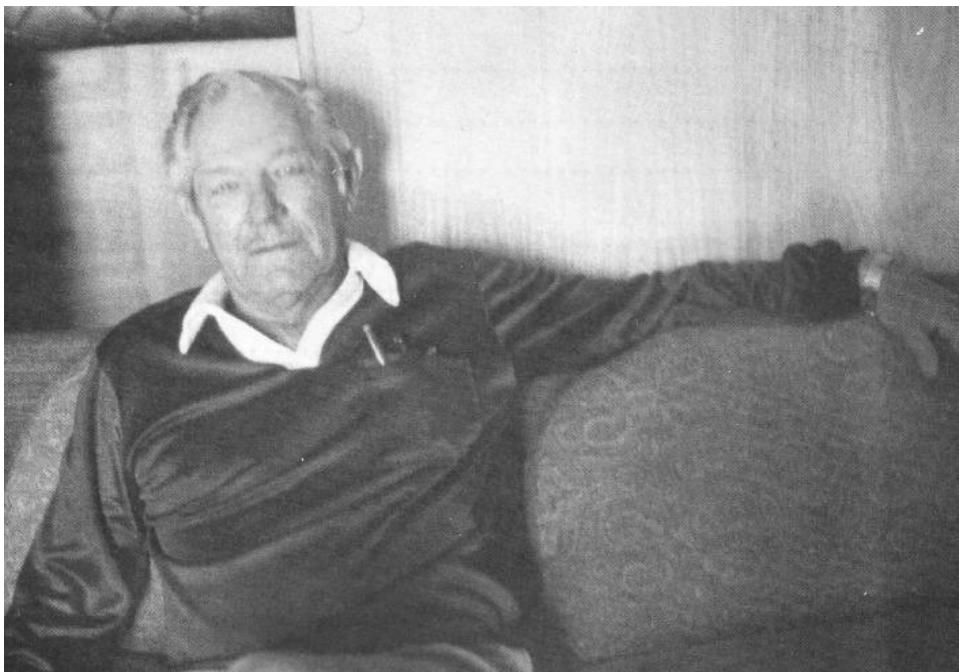


An Interview With  
Ernest H. "Forrest" Hansen

An Oral History conducted and edited by  
Robert D. McCracken

Nye County Town History Project  
Nye County, Nevada  
Tonopah  
1987

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Ernest H. "Forrest" Hansen  
1987

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## PREFACE

The Nye County Town History Project (NCTHP) engages in interviewing people who can provide firsthand descriptions of the individuals, events, and places that give history its substance. The products of this research are the tapes of the interviews and their transcriptions.

In themselves, oral history interviews are not history. However, they often contain valuable primary source material, as useful in the process of historiography as the written sources to which historians have customarily turned. Verifying the accuracy of all of the statements made in the course of an interview would require more time and money than the NCTHP's operating budget permits. The program can vouch that the statements were made, but it cannot attest that they are free of error. Accordingly, oral histories should be read with the same prudence that the reader exercises when consulting government records, newspaper accounts, diaries, and other sources of historical information.

It is the policy of the NCTHP to produce transcripts that are as close to verbatim as possible, but some alteration of the text is generally both unavoidable and desirable. When human speech is captured in print the result can be a morass of tangled syntax, false starts, and incomplete sentences, sometimes verging on incoherency. The type font contains no symbols for the physical gestures and the diverse vocal modulations that are integral-parts of communication through speech. Experience shows that totally verbatim transcripts are often largely unreadable and therefore a waste of the resources expended in their production. While keeping alterations to a minimum the NCTHP will, in preparing a text:

- a. generally delete false starts, redundancies and the uhs, ahs and other noises with which speech is often sprinkled;
- b. occasionally compress language that would be confusing to the reader in unaltered form;
- c. rarely shift a portion of a transcript to place it in its proper context;
- d. enclose in [brackets] explanatory information or words that were not uttered but have been added to render the text intelligible; and
- e. make every effort to correctly spell the names of all individuals and places, recognizing that an occasional word may be misspelled because no authoritative source on its correct spelling was found.

## ACKNOWLEDGMENTS

As project director, I would like to express my deep appreciation to those who participated in the Nye County Town History Project (NCTHP). It was an honor and a privilege to have the opportunity to obtain oral histories from so many wonderful individuals. I was welcomed into many homes—in many cases as a stranger—and was allowed to share in the recollection of local history. In a number of cases I had the opportunity to interview Nye County residents whom I have known and admired since I was a teenager; these experiences were especially gratifying. I thank the residents throughout Nye County and southern Nevada—too numerous to mention by name—who provided assistance, information, and photographs. They helped make the successful completion of this project possible.

Appreciation goes to Chairman Joe S Garcia, Jr., Robert N. "Bobby" Revert, and Patricia S. Mankins, the Nye County commissioners who initiated this project. Mr. Garcia and Mr. Revert, in particular, showed deep interest and unyielding support for the project from its inception. Thanks also go to current commissioners Richard L. Carver and Barbara J. Raper, who have since joined Mr. Revert on the board and who have continued the project with enthusiastic support. Stephen T. Bradhurst, Jr., planning consultant for Nye County, gave unwavering support and advocacy of the project within Nye County and before the State of Nevada Nuclear Waste Project Office and the United States Department of Energy; both entities provided funds for this project. Thanks are also extended to Mr. Bradhurst for his advice and input regarding the conduct of the research and for constantly serving as a sounding board when methodological problems were worked out. This project would never have become a reality without the enthusiastic support of the Nye County commissioners and Mr. Bradhurst.

Jean Charney served as administrative assistant, editor, indexer, and typist throughout the project; her services have been indispensable. Louise Terrell provided considerable assistance in transcribing many of the oral histories; Barbara Douglass also transcribed a number of interviews. Transcribing, typing, editing, and indexing were provided at various times by Alice Levine, Jodie Hanson, Mike Green, and Cynthia Tremblay. Jared Charney contributed essential word processing skills. Maire Hayes, Michelle Starika, Anita Coryell, Michelle Welsh, Lindsay Schumacher, and Jodie Hanson shouldered the herculean task of proofreading the oral histories. Gretchen Loeffler and Bambi McCracken assisted in numerous secretarial and clerical duties. Phillip Earl of the Nevada Historical Society contributed valuable support and criticism throughout the project, and Tan King at the Oral History Program of the University of Nevada at Reno served as a consulting oral historian. Much deserved thanks are extended to all these persons.

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--Robert D. McCracken  
Tonopah, Nevada  
June 1990

## INTRODUCTION

Historians generally consider the year 1890 as the end of the American frontier. By then, most of the western United States had been settled, ranches and farms developed, communities established, and roads and railroads constructed. The mining boomtowns, based on the lure of overnight riches from newly developed lodes, were but a memory.

Although Nevada was granted statehood in 1864, examination of any map of the state from the late 1800s shows that while much of the state was mapped and its geographical features named, a vast region--stretching from Belmont south to the Las Vegas meadows, comprising most of Nye County-- remained largely unsettled and unmapped. In 1890 most of southcentral Nevada remained very much a frontier, and it continued to be for at least another twenty years.

The great mining booms at Tonopah (1900), Goldfield (1902), and Rhyolite (1904) represent the last major flowering of what might be called the Old West in the United States. Consequently, southcentral Nevada, notably Nye County, remains close to the American frontier; closer, perhaps, than any other region of the American West. In a real sense, a significant part of the frontier can still be found in southcentral Nevada. It exists in the attitudes, values, lifestyles, and memories of area residents. The frontier-like character of the area also is visible in the relatively undisturbed quality of the natural environment, most of it essentially untouched by human hands.

A survey of written sources on southcentral Nevada's history reveals some material from the boomtown period from 1900 to about 1915, but very little on the area after around 1920. The volume of available sources varies from town to town: A fair amount of literature, for instance, can be found covering Tonopah's first two decades of existence, and the town has had a newspaper continuously since its first year. In contrast, relatively little is known about the early days of Gabbs, Round Mountain, Manhattan, Beatty, Amargosa Valley, and Pahrump. Gabbs's only newspaper was published intermittently between 1974 and 1976. Round Mountain's only newspaper, the Round Mountain Nugget, was published between 1906 and 1910. Manhattan had newspaper coverage for most of the years between 1906 and 1922. Amargosa Valley has never had a newspaper; Beatty's independent paper folded in 1912. Pahrump's first newspaper did not appear until 1971. All six communities received only spotty coverage in the newspapers of other communities after their own papers folded, although Beatty was served by the Beatty Bulletin, which was published as a supplement to the Goldfield News between 1947 and 1956. Consequently, most information on the history of southcentral Nevada after 1920 is stored in the memories of individuals who are still living.

Aware of Nye County's close ties to our nation's frontier past, and recognizing that few written sources on local history are available, especially after about 1920, the Nye County Commissioners initiated the Nye County Town History Project (NCTHP). The NCTHP represents an effort to systematically collect and preserve information on the history of Nye County. The centerpiece of the NCTHP is a large set of interviews conducted with individuals who had knowledge of local history. Each interview was recorded, transcribed, and then edited lightly to preserve the language and speech patterns of those interviewed. All oral history interviews have been printed on acid-free paper and bound and archived in Nye County libraries, Special Collections in the James R. Dickinson Library at the University of Nevada, Las Vegas, and at

other archival sites located throughout Nevada. The interviews vary in length and detail, but together they form a never-before-available composite picture of each community's life and development. The collection of interviews for each community can be compared to a bouquet: Each flower in the bouquet is unique--some are large, others are small--yet each adds to the total image. In sum, the interviews provide a composite view of community and county history, revealing the flow of life and events for a part of Nevada that has heretofore been largely neglected by historians.

Collection of the oral histories has been accompanied by the assembling of a set of photographs depicting each community's history. These pictures have been obtained from participants in the oral history interviews and other present and past Nye County residents. In all, more than 700 photos have been collected and carefully identified. Complete sets of the photographs have been archived along with the oral histories.

On the basis of the oral interviews as well as existing written sources, histories have been prepared for the major communities in Nye County. These histories also have been archived.

The town history project is one component of a Nye County program to determine the socioeconomic impacts of a federal proposal to build and operate a nuclear waste repository in southcentral Nye County. The repository, which would be located inside a mountain (Yucca Mountain), would be the nation's first, and possibly only, permanent disposal site for high-level radioactive waste. The Nye County Board of County Commissioners initiated the NCTHP in 1987 in order to collect information on the origin, history, traditions, and quality of life of Nye County communities that may be impacted by a repository. If the repository is constructed, it will remain a source of interest for hundreds, possibly thousands, of years to come, and future generations will likely want to know more about the people who once resided near the site. In the event that government policy changes and a high-level nuclear waste repository is not constructed in Nye County, material compiled by the NCTHP will remain for the use and enjoyment of all.

--R.D.M.

Robert McCracken interviewing Forrest Hansen at his home in the Amargosa Valley, Nevada - April 6, 1987

## CHAPTER ONE

FH: Believe it or not, I was born on a farm in Wisconsin near Green Bay. I went to high school in a little town called Gillett, Wisconsin.

RM: When were you born?

FH: May 8, 1925. The first half of twins; I have a twin sister. Just along about the time I got out of high school, I joined the Marine Corps - in 1943. Right when the war was going on. And I wound up being a Marine paratrooper. I was with one of the most famous regiments in history: First Marine Parachutists. Took Guadalcanal, Choizal, Bougaineville . .

RM: Were you at those places?

FH: I wasn't at Choizal; I was at Bougaineville. I went in at Saipan and New Guinea.

RM: You made jumps at all those places?

FH: No, no. Marine troopers never jumped in action, they always went in Higgins boats.

After I got out of the service, in '45, I did a little stint at making cheese back in Wisconsin. When the fall rolled around, in '46, I started college. I attended Wisconsin State University at Oshkosh. And I was going to be a forestry major. But the VA came and give me a quiz, and said, "Hey, you're not going to make any money at this - being a forest ranger." So they talked me into going to mining school.

I went to the University of Wisconsin at Platteville - Wisconsin Institute of Technology. Wisconsin School of Mines. And from there I matriculated to Rolla, Missouri. I attended Rolla for 6 months, then went back. Rolla, Missouri, is one of the largest mining schools in the states. That and the Colorado School of Mines. So I went back and got my degree from the University of Wisconsin at Platteville.

From there I went to work for the Ozark Mahoney Company, which was headquartered in Tulsa, Oklahoma. Ozark had 3 divisions: a chemical division, an oil division, and a mining division. And I went to work up at North Park, Colorado, as a mining engineer. That was in 1952, and I was there until 1959 and was transferred to West Texas - Monahan - to prospect sodium sulfate. I was there for 3 years, then they transferred me to southern Illinois and made me the superintendent of mining, in charge of all mines in Colorado, Kentucky, and Illinois.

Eventually Ozark was taken over by a big company - Penwalt. The forerunner of Penwalt was Pensalt, which was a big outfit. Penwalt was after our minerals - the fluorspar minerals we had. Of course, some of the other minerals that were with fluorspar were lead and zinc. They weren't interested in the lead and zinc; they were mainly interested in the fluorspar.

When I was in Colorado, in my spare time, I was chasing the wily isotope. You know, like a great Marine. So they had me out and I wound up on a project out of Moab, Utah. And - it was kind of a iffy, iffy thing. I ran into a fellow by the name of E. J. Mayhew. Everybody calls him Jay. I hired him as a consultant. He kind of clued me in on the various uranium prospects, which I had the right to know as far as the company was concerned. But anyway, when we got finished prospecting around for uranium, I'd run into Jay from time to time at airports. One time I ran into him in a motel in Salt Lake City. [laughs] So anyway, time went on.

Penwalt started to cut our operation back, and I wasn't all that interested. When we were really going a little strong, I liked it, but when they started to cut back and everything, I kind of lost interest in it. So along about the summer of 1974, I get a phone call from E. J. And he said, "We've got this plant out in Nevada and we're looking for a plant manager." He described the job and everything and said, "You know anybody like that who'd want that job?"

And I said, "Yes."

He says, "Who?"

I say, "Me."

He says, "You're kidding" [laughter]

So I came out here, and I can remember, I was out here in the latter part of July or the first part of August, and man, was it hot. It must've been 117 out there. But anyway, I didn't think that was too bad so I took the job and went to work the first of September. And of course the principal guy at IMV said, "Oh, we've got plenty of money and . . ."

RM: OK, now - IMV stands for . . .?

FH: Industrial Mineral Ventures. Headquartered, at that time, out of Golden, Colorado. So I took the job and our clays weren't all that good. Prior to the time that I came here, they hadn't milled 100 ton of clay. They hadn't done anything. They just had a plant sitting there.

RM: Was it a full plant?

FH: No. That big roller mill that you saw is all there was. And an old dryer.

RM: Why were the people at IMV interested in these clays?

FH: Well, the principals, Howard Prescott and his brother and Chisholm, the president of the company at that particular time, had worked in the steel business. They were interested in the clays out here for a balling clay. Do you know what a balling clay is?

RM: No.

FH: When they have taconite or hematite and they want to fire that into a ball before they put it in the blast furnace they use bentonite to make it ball up. It's a great big screen that rolls around, and it throws some (what they call seeds) in there. Seeds are small pieces of clay and iron ore. The material goes down a screen, hits the bentonite, gradually gets bigger.

RM: And it's a ball of iron and bentonite.

FH: Yes. Generally, those balls are about 3/4 of an inch in diameter. Then they fire those in a grate. And from there they ship then on into the blast furnace.

But the original principals of IMV, as I was telling you, had been in this business. They saw this bentonite out here, and that's why they were interested in it.

RM: Now, could you say a bit about the people from when they acquired the clay deposits?

FH: Originally they acquired some of the deposits from a fellow by the name of Ewing. He was out of Vegas. He was very famous, because he helped develop a lot of the gambling equipment that's used in Las Vegas.

RM: Did he originally stake out the claim?

FH: He originally got ahold of the Ewing Bentonite Pit. But no: Jay Mayhew had been out here in the '40s, when he worked for another firm out of Chicago. He did just enough drilling around that he knew that there were other deposits of clay besides the Ewing deposit. He had no idea how large the Ewing deposit was. So anyway, he got the Prescotts interested in investing in the clays. Of course, that's the first thing you have to have: you have to have the bankroll. So that's the first thing to do. He put a couple of drill rigs out, and I guess they must've drilled for a year and a half 'till they had the deposits pretty well pegged out. That's when they went ahead and got the money to build a plant. And that's when I came aboard. But it's like I told you: the clays weren't all that good. They didn't yield.

RM: Meaning what?

FH: They wouldn't work. They didn't yield as they were supposed to yield. So there were other things we could do. We could put an additive with it. You make a calcium-sodium bentonite into a sodium-calcium bentonite by adding soda ash. You get the ions of sodium from soda ash. That's called peptizing, by the way.

Originally we made quite a bit of product that wasn't very valuable, and we had a hard time selling it. And Industrial Minerals got kind of a dirty name in the business. This was about '75; '75, r76. They just didn't look like they were going to make it. So some of the investors started pulling out, and left the Prescotts . . . holding the bag. Some of these investors were from England, some were from Canada.

RM: And the Prescotts lived in Colorado?

FH: No, they lived in Cleveland. Then they started to hunt around to find somebody that would take them off the hook, you might say, financially and technically and the whole smear. So we had quite a few people caning through here to take a look at it. The people at Gulf Resources - a chemical company out of Houston - were highly interested in it. They got sucked in the same way I did, originally. There were vast reserves of clay out there. They thought, "Well, we can

offset anything else, as long as we've got the clay." So there was a change around in personnel, and they hired a guy by the name of John Jewett.

RM: By this time, had Gulf bought it?

FH: Yes; in 1978. Gulf purchased the company along about that time. They had an option on it before then, but they exercised their option in 1978. And John Jewett was the president for a while. He was aboard less than a year. And finally they moved Clifford Barr, one of the vice-presidents out of Houston, in as the president of the company and they formed a board of directors with Clifford as the president, and I was one of the directors, and a vice president and a salesman were also directors.

RM: Meanwhile, your job was what?

FH: I was manager of plants and mines. So I headed up the whole thing out here. When Gulf Resources came on board, they could see immediately that they were going to have to spend a bunch of money. So that was the time when I got them interested in Norman Pitt as our engineer. He was a consultant engineer with his own firm in Los Angeles. Up until that time our engineering firm had been Roberts and Schaeffer out of Salt Lake City.

RM: Now, meantime, you're going along with this inferior product.

FH: That's right.

RM: Just finding a few people to buy it, or what?

FH: Well, we sold quite a bit of it that worked as a balling clay when they had the plant going in California this side of San Diego.

RM: You mean taconite.

FH: Yes. I forget the name. It's shut down now. That business is not very good. So anyway, when Norman Pitt came aboard as our consultant engineer, he's a guy who kind of says, "Hey, look, fellows. You've got an inferior clay. They only way you're going to jazz it up, so to speak, is to extrude it. Or beneficiate it. Some other . . ." You saw today how the extruder works. We reduce the size of a clay particle to about 5 mesh. You saw the screen; you know how that works. It has to have a certain consistency to be driven through that screen, or the die, under high pressure. What that does is open up the clay platelets so that when they're dried and ground, and used with water, the clay becomes immediately OK. It has a tremendous rapid increase in viscosity. And that's basically what we're after: viscosity.

RM: Increase in viscosity means what?

FH: Well, viscosity makes it real thicksotropic. Now, that's a word you'll have to look up. [laughter] In other words, it's got a viscosity. Everything's got a viscosity. Water's got a viscosity.

RM: It means that it'll get thicker?

FH: That's exactly what it means. That's all the shear you'd use, for the most part. And the extruder works by forcing it - with an auger - through the die or the screen - whatever you're using for a die - under great pressure. That shears the clay so that when it's then dry, and ground, it will react with the water a lot faster. Otherwise you'd have to sit there and use a lot of shear - with the water - to make it work. The clays are tested with a multi mixer. Just like you use to make ice cream or malted milk.

RM: Oh - it shakes them up to see how much it puffs up, in effect.

FH: That's measured. You use a certain amount of water, and everybody in the business does it the same way. It's a standard. It's called an API test. So that we take our material, we measure the viscosity here, and we ship it to Texas, they'll take a sample of it, and they measure it the same way, and everybody agrees; that's how good it is.

RM: And Norman Pitt was the one who said you had to extrude it. Had he had experience with extruding before?

FH: I didn't know that, but that's true. [laughs] I found out later. In fact, I found out about 2 years ago that that sucker already knew about it. [laughter] But nevertheless, that made all the difference.

RM: So that changed it from an inferior product to one you could sell.

FH: That's correct.

RM: And this was in '78. So then what did you do?

FH: We set up an extruding operation and expanded.

RM: Why don't you tell me about the types of clay that you have here.

FH: Well, basically we have 4 types.

RM: Probably we should explain to anybody who reads this that when you think of clay, we're not talking about the molding kind.

FH: This is a swelling-type clay. It's not a clay that you use for molding.

RM: Superficially it seems a little bit the same when you get it on your shoes, though.

FH: Well, that may be true, but it's an expanding-type clay.

RM: Yes. Why don't you go through the types that you described to me today. FH: The pit that we visited first was saponite. It's a kind of a chocolate colored material By the way, they all belong to the smectite family. We have a large amount of saponite. We don't know how much, but it runs in the millions of tons. It's all a vast area. And we blend the bentonite and saponite together to get what we call our Inverpol Gel. It has lots of uses. It is a blend of smectite clays for use in drilling fluids, stucco, asphalt emulsions, fillers and sealants. That's also used in the burial of chemical wastes I was describing to you in California. And there are other uses besides that, but that's briefly what it is. But that's a blend of bentonite and saponite.

RM: Now why don't you describe what bentonite is?

FH: Bentonite is another smectite,, Of course, most of the bentonite clays come from Wyoming. But due to the cost of trucking from Wyoming to the west coast, we've got quite a bit of the business as long as we've got a good material to sell. We sell the bentonite by itself. We call it IGB or IGBA. IGB, means exactly what it says: Industrial Grade Bentonite. IGBA has an additive. The additive is the soda ash that I was telling you about. IGB does not have any of that.

RM: Where do you get the soda ash?

FH: We buy it from Wyoming.

RM: And then you add that . .

FH: Yes; that's called Trona. It makes the clay from a calcium-sodium bentonite into a sodium-calcium bentonite by taking the ion of sodium out of the soda ash.

RM: How does that change its uses?

FH: It makes it yield better. So with the rapid extrusion and the addition of the soda ash, you wind up with a real good clay.

RM: What do they use the industrial grade bentonite for?

FH: Industrial-grade bentonite is used in many things. It yields in aqueous solutions.

RM: So they use it in water.

FR: It's used in water, but it can be used as a paint pigment. Not very-much of it is used that way. But it's used in spackling compounds. And they can use it under water to seal leaks.

RM: What is the IGBA used for?

FH: The same thing; just better. There are some uses for bentonite where they don't want the viscosity, like on wallboard. As long as they get it on, they don't care about viscosity.

RM: Well, why do they use it, then?

FH: Boy, it beats me. They want talcs. [laughs] It's a sealant; drywall.

RM: Do you sell it to the gypsum plant in Vegas?

FH: No, we sure don't. We sell it to the producers in Commerce City, California.

## CHAPTER TWO

FH: The next pit we went to was sepiolite. The largest use that we used to have for it was in salt-water drilling fluid; where we have to drill down through salt domes, and all that. It's salt-tolerant. Now, bentonites would flocculate.

RM: They'd fall apart?

FH: Yes. It wouldn't disperse the way sepiolite will. Sepiolite is not only salt-tolerant, it's heat-tolerant. This is the only sepiolite deposit in the United States. There's only one other in the world, and that's in Madrid.

RM: Oh; that's right. You said that good, high-quality sepiolite is meerschaum, which they make the pipes from.

FH: That's correct. But getting back to the sepiolite. Our sepiolite is not used as much in the drilling business anymore, for the simple reason that the drilling business is kind of down the tube. So we have an industrial grade sepiolite. And it is used in asphalt formulations, roofing compounds, tape joint cements, stucco, latex paints, and spackling compounds.

RM: Do you sell this around the world, then?

FH: As a matter of fact, we do. Of course, as I told you, attapulgite, which is found in Georgia and Florida, is a competitor of sepiolite.

RM: And how much sepiolite did you say you have - about 600,000 tons? That you know of?

FH: Oh, we've got more than that. But that's what I have on the books.

RM: It seems that operations really got kicked off about '78, then?

FH: That's true.

RM: How many men were you working before that?

FH: One hundred twenty-five. I had 22 gals in the laboratory.

RM: Did most of the workers live in the valley?

FH: Quite a few of them did. Some of them lived in Shoshone and places like that. Not very many from Pahrump.

RM: What happened to the employment rate as you went to the extrusion?

FH: Well, mostly it went down. We had to be competitive. In other words, what we had to do was reduce our costs. Where we used 2 men before, we only use one now.

RM: How did you manage that?

FH: By adding more machinery. We found out that we were wasting manpower.

RM: So as of today, April 1987, your work force is approximately how large?

FH: Between 55 and 60. And most of them live right here in the valley.

RM: And when did it get down to that level of employment?

FH: Oh, about 2 years ago. It's been a steady drop.

RM: And it wasn't because you were producing less tons, but because you were becoming more efficient.

FH: Well, one of the problems we had, Bob, in earlier years, was a high turnover; it was around 300 percent.

RM: Why was that?

FH: Danged if I know. People were caning and going. You could go and get a job anywhere. When all of a sudden, when Reaganomics started they quit running away from here. Not only that, our production improved. These guys knew what they were doing.

RM: Yes; you didn't have to be breaking somebody in all the time.

FH: That's correct. . Now, back to the sepiolite. We take it, and it's as it shows in the pamphlet here. One of the uses of our sepiolite is what we call thermogel. This is where it can stand static temperatures of 800 degrees or better. Today we sell thermogel to Japan and they use it as an asbestos replacement in paneling.

RM: Oh. Because it won't burn or melt.

FH: Well, that's part of it. Also, sepiolite has a long, fiber-like structure somewhat similar to asbestos, but it's not asbestos type. So it can replace asbestos. That's where we get a lot of use for it.

RM: It doesn't have the health problems that . .

PH: No. And our Sepiogel A is used in the agriculture industry. It's used for slurring cow feed, for one thing.

RM: And those cows just eat that clay?

FH: You betcha. It's also used for suspending fertilizers. Your potash fertilizers aren't exactly always solvent. There are some potassium salts that are wet, and they just don't have time to sit around waiting for them to melt, you might say. [chuckles] So they use a small percentage of the clay and they suspend their fertilizer. They put it right on the field. We sell quite a bit of that. It goes into west Texas, and a lot of it goes to Kansas and Colorado. They use it for two things: cow feed and fertilizer suspension. Those are the various uses of sepiolite, and we produce quite a bit of it.

Now let's get on to the hectorite. As I showed you, there are only two places in the United States where hectorite is found. One of them is in Hector, California, right across the border down here, and the other one's right here.

RM: Is there active mining going on at Hector?

FH: Yes. They're a competitor. In fact, they invented the organoclad clays.

RM: Tell us about hectorite.

FH: Well, originally we had set up a process here - and spent a lot of money on the process - to separate the hectorite from the calcium carbonate. They're mixed together in the deposit in about a 4 to 1 ratio. In other words, there's 4 times as much calcium carbonate as there is hectorite. So in the process that we developed originally, we were going to knock off the balance of the calcium carbonate by acidizing, using hydrochloric acid. Then we were going to swoop it back with ammonia and neutralize it. Well, we got out the calcium carbonate, but it screwed up the clay. It absolutely wasn't worth a damn. So after we finished that project, we left the wet circle alone for quite awhile, and then we went back just using a quaternary amine. And cleaning the clay . . .

In defining quaternary amine, quatra is four; there are 4 ingredients in it. The main ingredient is a stearate - steer fat. It's got other things in it, too. Some of it's alcohol. We react the bentonite or hectorite - it's a chemical reaction - with a quaternary amine and it changes the clay from being hydroscopic to hydrophobic. In other words, it now hates water. It's missible in diesel oil or mineral spirits or anything like that, but water -forget it. As a consequence, it's used in paints and greases and plastics. So when we produce it, of course the vehicle - how we keep it going through the plant - is the water. But the minute that we react it running through, and then we run it over a filter, we are able to filter it. Prior to that, you couldn't filter it to save your neck in the water. But the minute that you change the clay from liking water to hating water, you're able to filter it. It goes in a tank and is heated to 150 degrees, and then the hectorite, or the clay, is circulated right with the quaternary amine, which is steer fat and alcohol and a couple of other ingredients. The amine is generally made around a slaughterhouse back in Chicago. It costs about 80 cents a pound.

RM: When they call it organoclad, does it mean that the clay molecule is clad in an organic molecule? Is that really what . . .

FH: And it's . . . stearate.

RM: So basically what we've got is another use for beef tallow besides McDonald's french fries? [laughter]

FH: We bring the liquid quaternary amine in here and mix it with the clay. They're mixed and reacted. It takes about oh, for - what we call batching it - it takes about half an hour to react it. Because we circulate it and pump.

RM: Didn't you say another use for that - although you don't do it with your product - is to coat M&Ms?

FH: Yes. [laughs] That's correct.

RM: [laughs] The candy. You mentioned another mine in the area - the Vanderbilt. Would you say a few words about it?

FH: The Vanderbilt Mine is right out the back of our hectorite deposit. And probably it's a smectite. It's probably saponite. The Vanderbilt people grind it up and take the fine colloid content of it, which probably represents about 40 percent of the clay. A colloidal suspension of anything is a fine-grained, very fine material. The colloids float to the top and are removed. They peel that off, dry it, and it's shipped to New York, where it's made into face powder.

RM: So people around the world are wearing a little of the Amargosa on their faces? [laughs]

FH: You might say that. And in other ways, too. There are hundreds - literally hundreds - of uses for clays. It's a whole industry that most people don't have an awareness of. You've got it in your home - everybody's got it in their home. Yet they don't know it.

RM: And you were telling me that these clays are of volcanic origin?

FH: Well, that's one of the proposals set forth by the geologists: that at one time they were volcanic ashes that probably blew in here from California. Of course, that in itself doesn't make the clay deposits. Something else has to happen. What happened was, this area was under hundreds of feet of water and it stayed there for a good many years. Then the entire area was uplifted again, and of course the water was drained off. In the process of uplift, the volcanic ash changed to clay. Those clays are saponite and sepiolite. The hectorite was not formed that way. It was ascending hot water, probably. That's why it's found with the calcium carbonate. The calcium carbonate was precipitated, and probably the hectorite was too.

RM: How do you see the future of the industry here in the valley?

FH: Well, I don't know if our industrial clays are going to hack it by themselves. Our organoclad clays are about 5 percent of our tonnage and about 60 percent of our revenue. And the future of IMV is with the organoclad clays.

RM: Why isn't the other selling?

FH: Well, Bob, unless we can sell into markets like the use of the clay as waste disposal . . . Now that's a good use. And probably in the future it will be a big use. And it's all thanks to the EPA, so you've got a tight shoe and a loose shoe. [laughter] So they've done us a favor. But nevertheless, we're really finding our organoclad clays are our best bet. You can see that.

RM: Do you see the oil uses as coming back?

FH: Well, it's bound to come back. By the way, the organoclad clays are used in the oil drilling business a lot. The reason for that is that they don't have to change their drilling fluid. Because the minute they hit oil, well, it's missible in oil. They use it on what we call well completions. They complete the well with organoclad clays.

RM: And they're expensive, aren't they?

FH: They're danged expensive. But in the long run, they pay for themselves. We've sent a lot of organoclad clay into the North Sea and up to Prudhoe Bay in Alaska.

RM: Are you the major producer of organoclad clays?

FH: No, we are not. The biggest producer - and our biggest competitor - is National Lead, the one that invented it.

RM: Is there anything you'd like to add?

FH: Well, one of our products is called Imvitone II. All our organoclad clays are called Imvitones. Now, that's a wedge . . . Originally, they were called bentones by National Lead. But we call them Imvitones. We have to have a different name. But they're the same thing. And of course our competitors have got bentones and we've got Imvitones.

[break in the tape]

FH: It's quality control, like any other business. But you have no idea how intense we are with quality control. We start out our pits by drilling holes. And we take the clay in, and we run it through our laboratories so we know about what we've got. Then, we drill off in about 50 foot centers So that when we're ready to mine, we know about what our grade of the are is. Every day when we mine, and we put it in a pile, we grab sample it. Every day that comes in. When we haul it in, we put it in a pile and we know about what that pile is. We haul it in every days

we sample it again. Every truckload OK, we put it in this pile, or we put it in that pile. So now we know what we've got. We blend them together, run them through the extruder, and then sample - every hour - what comes out of the extruder. Then it goes into the dryer. Guess what? Every hour we sample it. OK, now we're going to run it through the plant. Through the high-side mill, or whatever. Every ton and a half is sampled. And the sample's sent to the laboratory.

RM: Is the lab here in the valley?

FH: We have 2 of them. Right out there. One of them is at the end of the office, the other one is right down by the mill.

RM: Yes. Basically, do you do your water shake test to see . .

FH: Well, it isn't a shake test. There's a set time on it, and there's a set amount of water that goes in - 250 milliliters of water and 22 grams of the clay. That's put in this mixer, under high shear. And they have a little stop clock there. They run it for 20 minutes, take it out, and then we've got a little tool that will measure the viscosity.

RM: What do you do if it comes short?

FH: By the time that we have used all this quality control, that doesn't happen. Very little of our product ever goes out the back door anymore. And the answer to that is quality control.

RM: Do you have any pictures in the archive?

FH: That's the best one we've got. [laughs] A. D. Hopkins, the editor of The Nevadan, came out here and ran a write-up on IMV one time.

RM: Why don't you say something about the company owning the land right here where you get your water?

FH: Well, originally the land, 240 acres, was bought for the water rights to run the plant on. The company put in a 12-inch line 4 miles - from here to the plant - on the right-of-way. Some of the first roads - the first 2 roads - that the Amargosa Valley had that were dedicated entirely by the county were the 2 roads that go to IMV. We had to get a right-of-way so we could run the water line, so we had to get a right-of-way for the power. As a consequence, we got those rights-of-way in 1973. Those were the first dedicated roads in the valley. Now, most of the roads are dedicated, but they weren't at that time.

[RM: Can you say a few words about American Borate's operations in the Amargosa Valley?]

FH: Originally-American Borate was Tenneco and they had a large open pit strip mine right on the edge of Death Valley. They called what was the underground mine the Billy Mine. Tenneco got an awful lot of bad publicity from mining near Death Valley. In fact, it was in Newsweek. So

they just cut out of there. American Borate originally was owned by 3 individuals. Then Owens Corning came along and bought it.

RM: They didn't mind the bad publicity?

FH: Well, by that time they had their act cleaned up. They were out of the open pit and in the shaft. They did everything by the book, and they spent a lot of money on a shaft. But then of course what happened was, Turkey come along and then they can produce for less money.

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